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Badaroux

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[54] **ELECTRICAL CONNECTOR HOUSING MEMBER**

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[73] Assignee: **Connecteurs Cinch**, Montigny le Bretonneux, France

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[30] **Foreign Application Priority Data**

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[51] **Int. Cl.**[6] **H01R 13/40**

[52] **U.S. Cl.** **439/595**

[58] **Field of Search** 439/595, 744, 439/752

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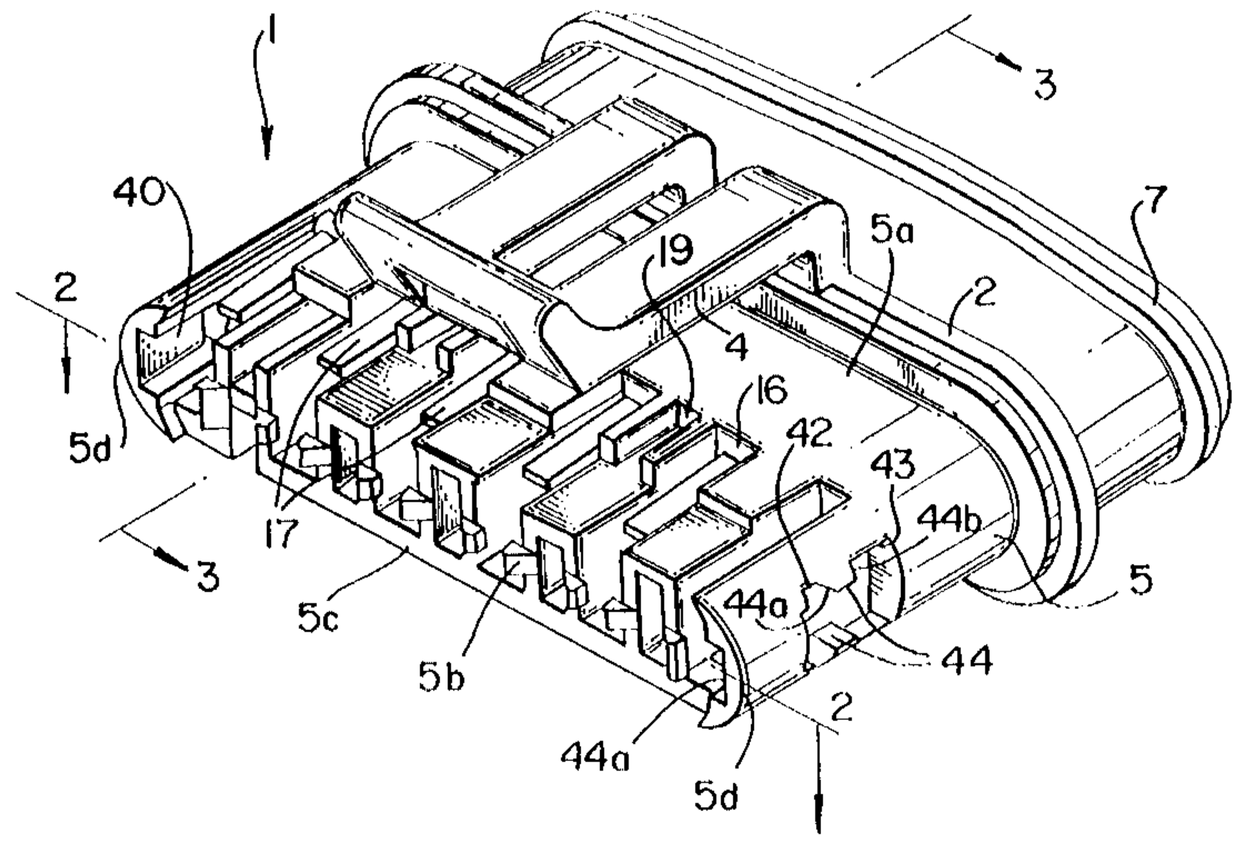
Primary Examiner—Larry I. Schwartz
Assistant Examiner—Daniel Wittels
Attorney, Agent, or Firm—Greenblum & Bernstein

[57] **ABSTRACT**

An electrical connection housing member comprises a body with passages and a retaining lug for an electrical contact member. The body includes slideways with detents for receiving a locking member which has an end wall and locking bars which cooperate with the detents and steps to lock the resilient lugs.

3 Claims, 7 Drawing Sheets



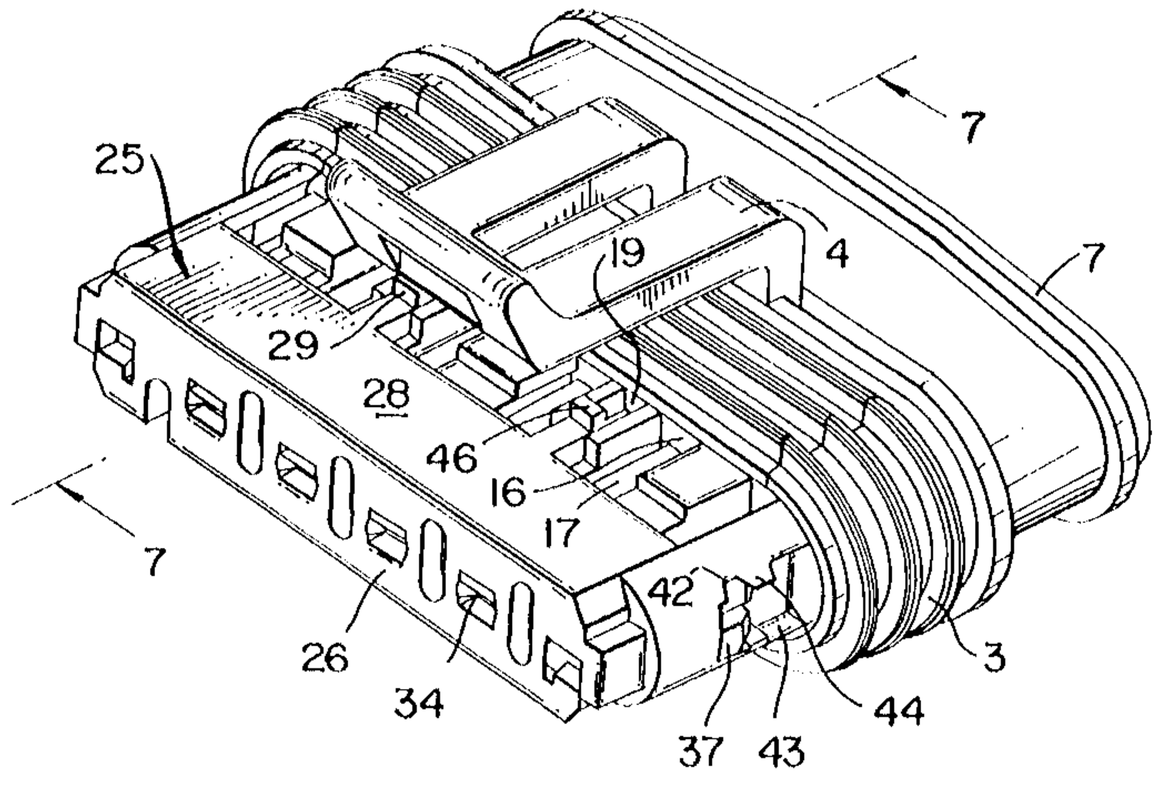
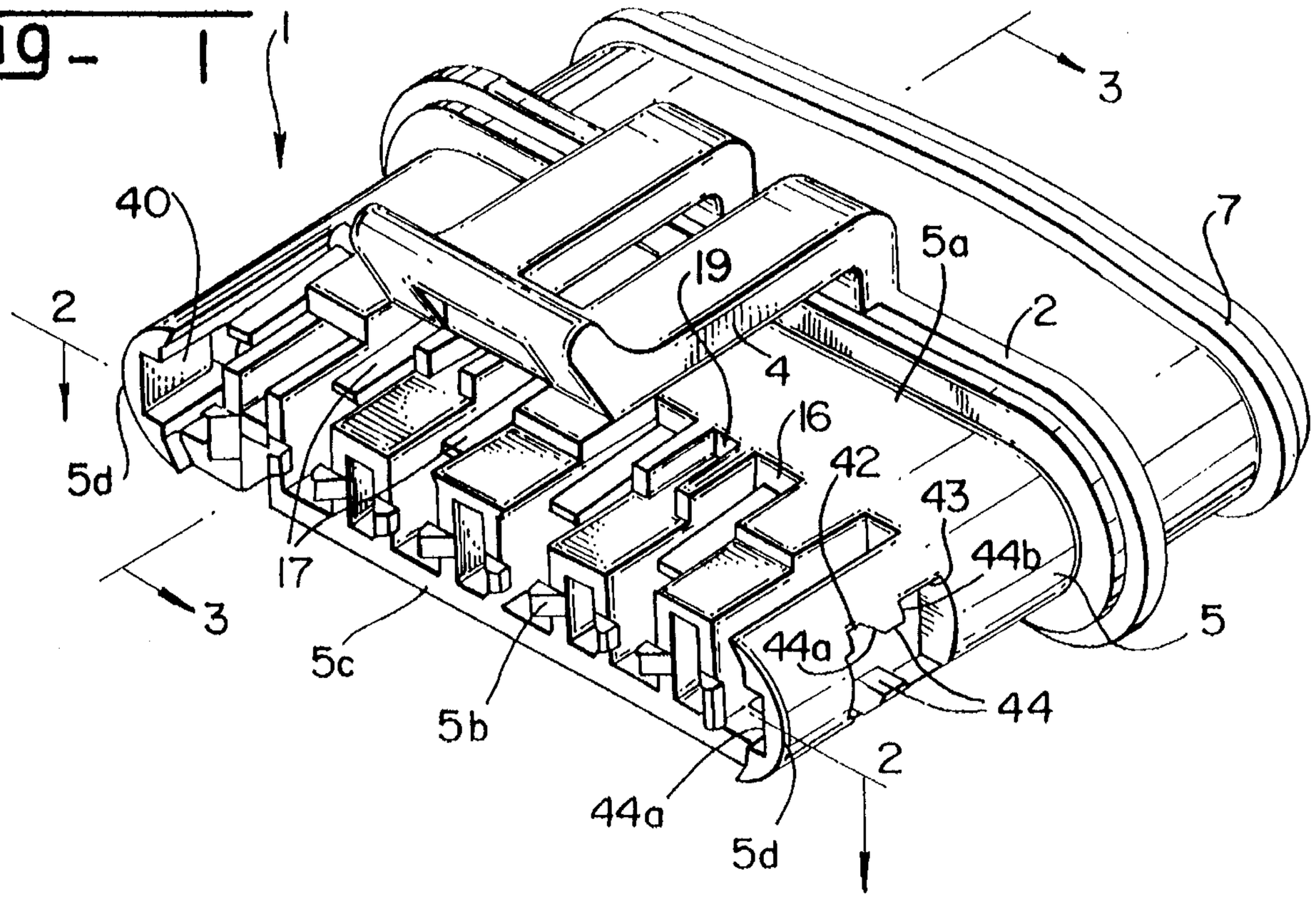


Fig- 1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5b
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44a
5d

Fig- 2

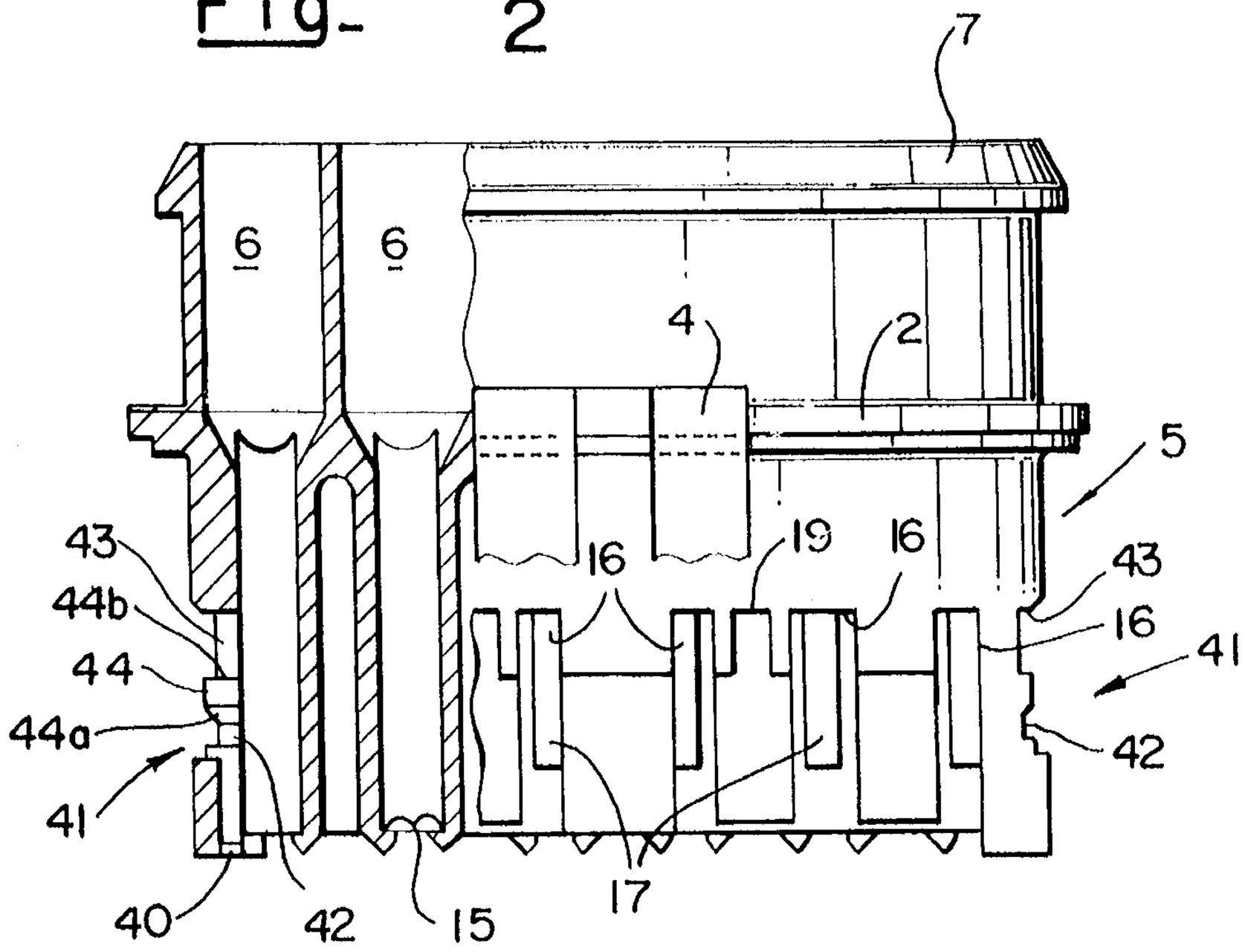
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Fig- 3

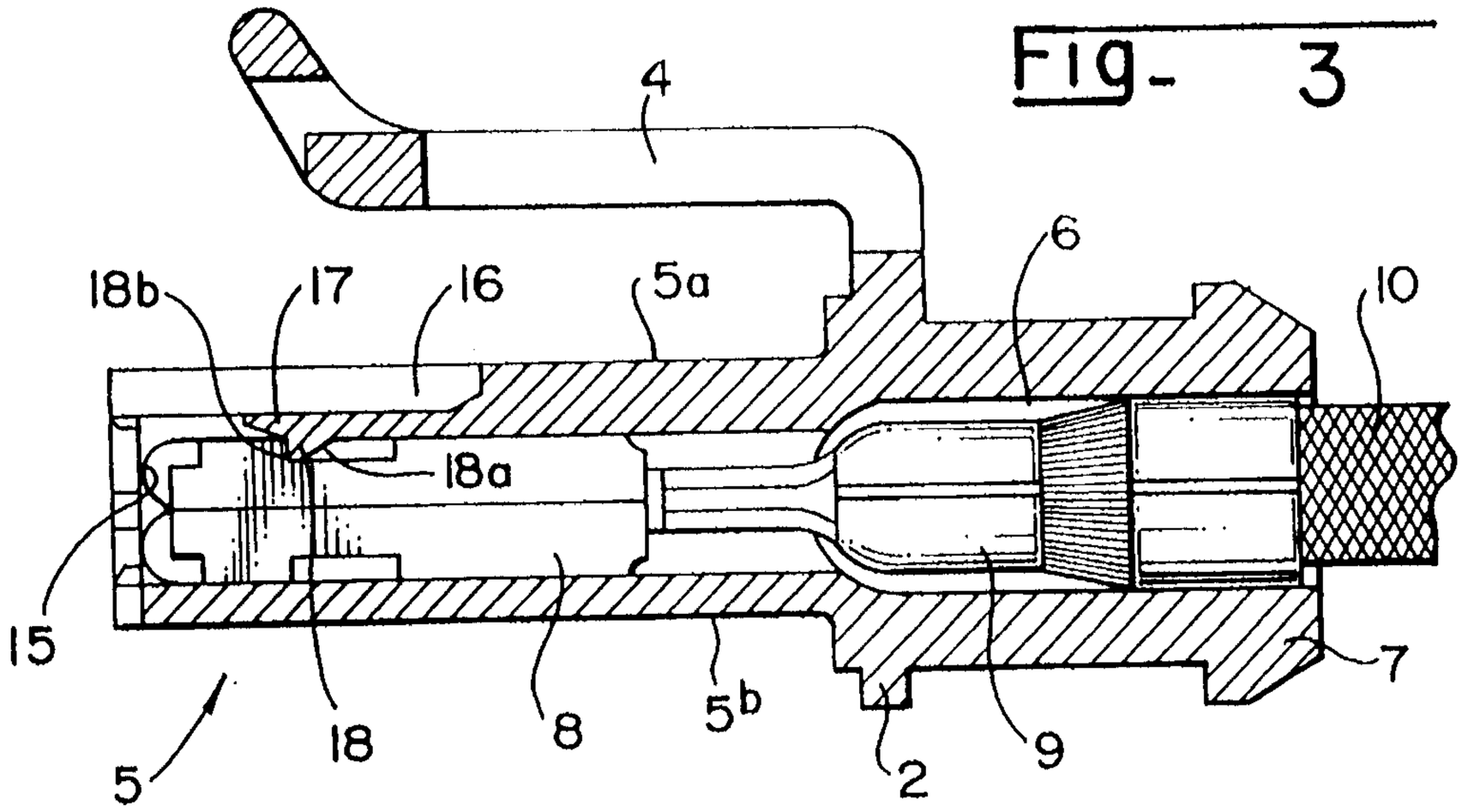

Fig- 4

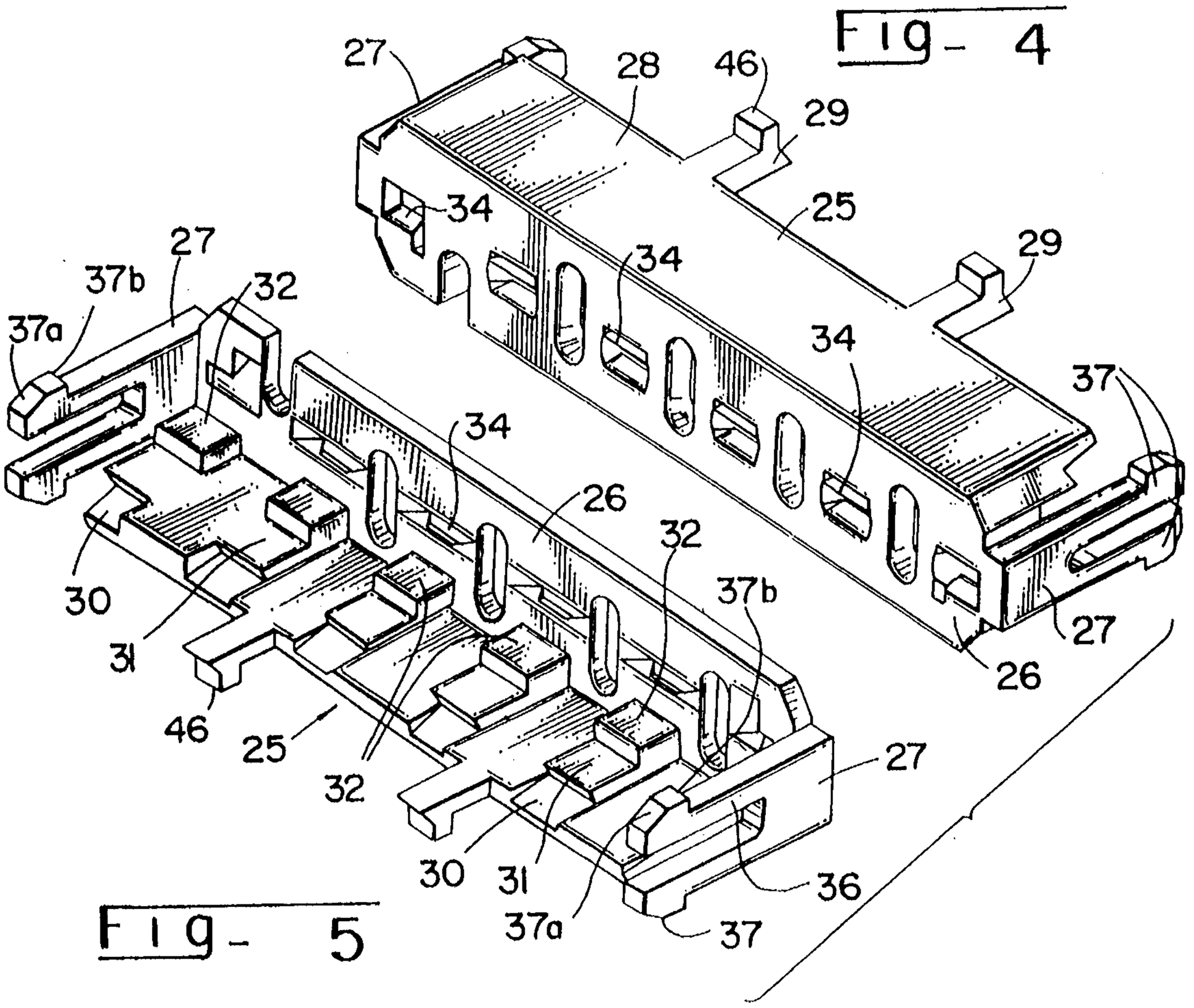

Fig- 5

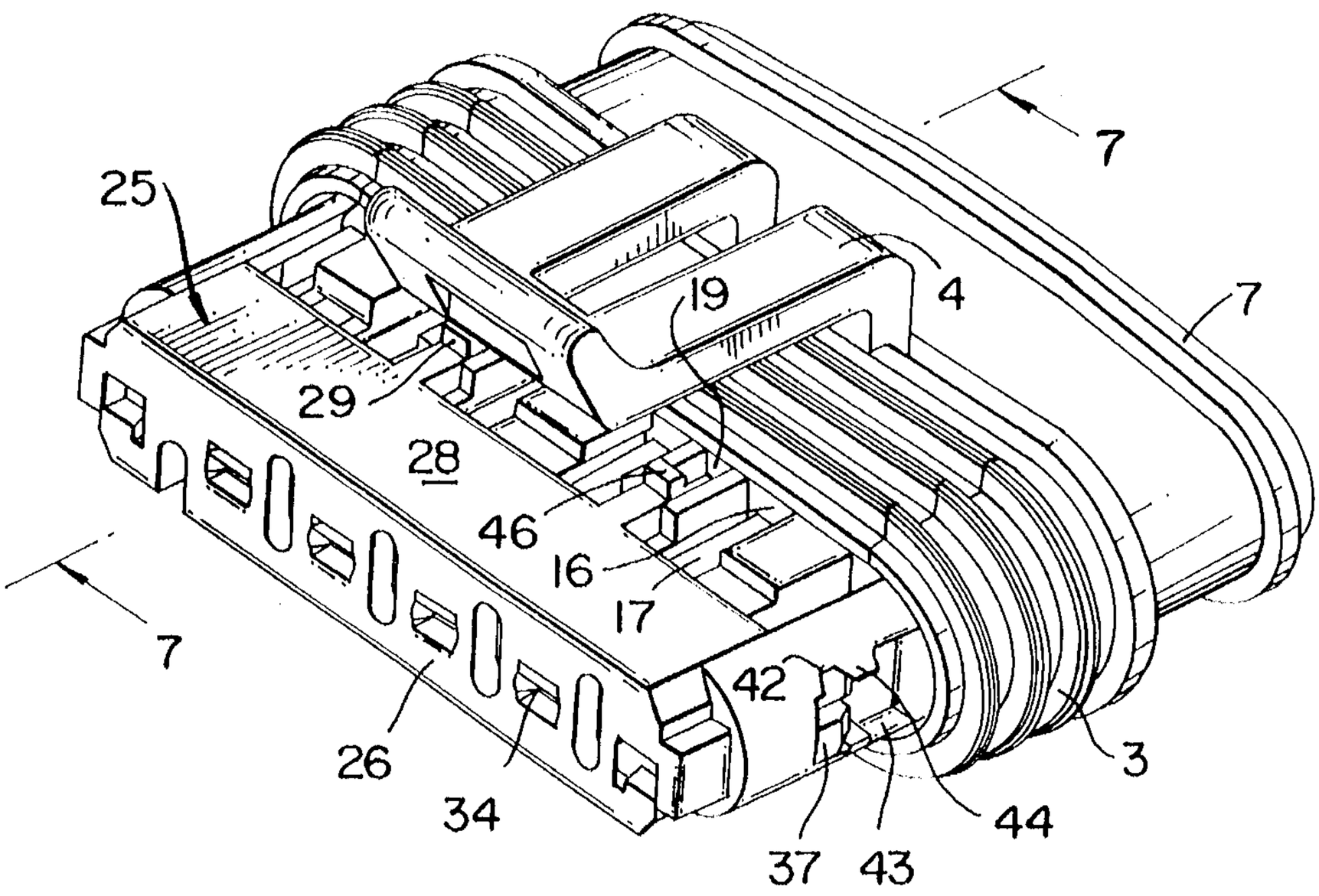
25
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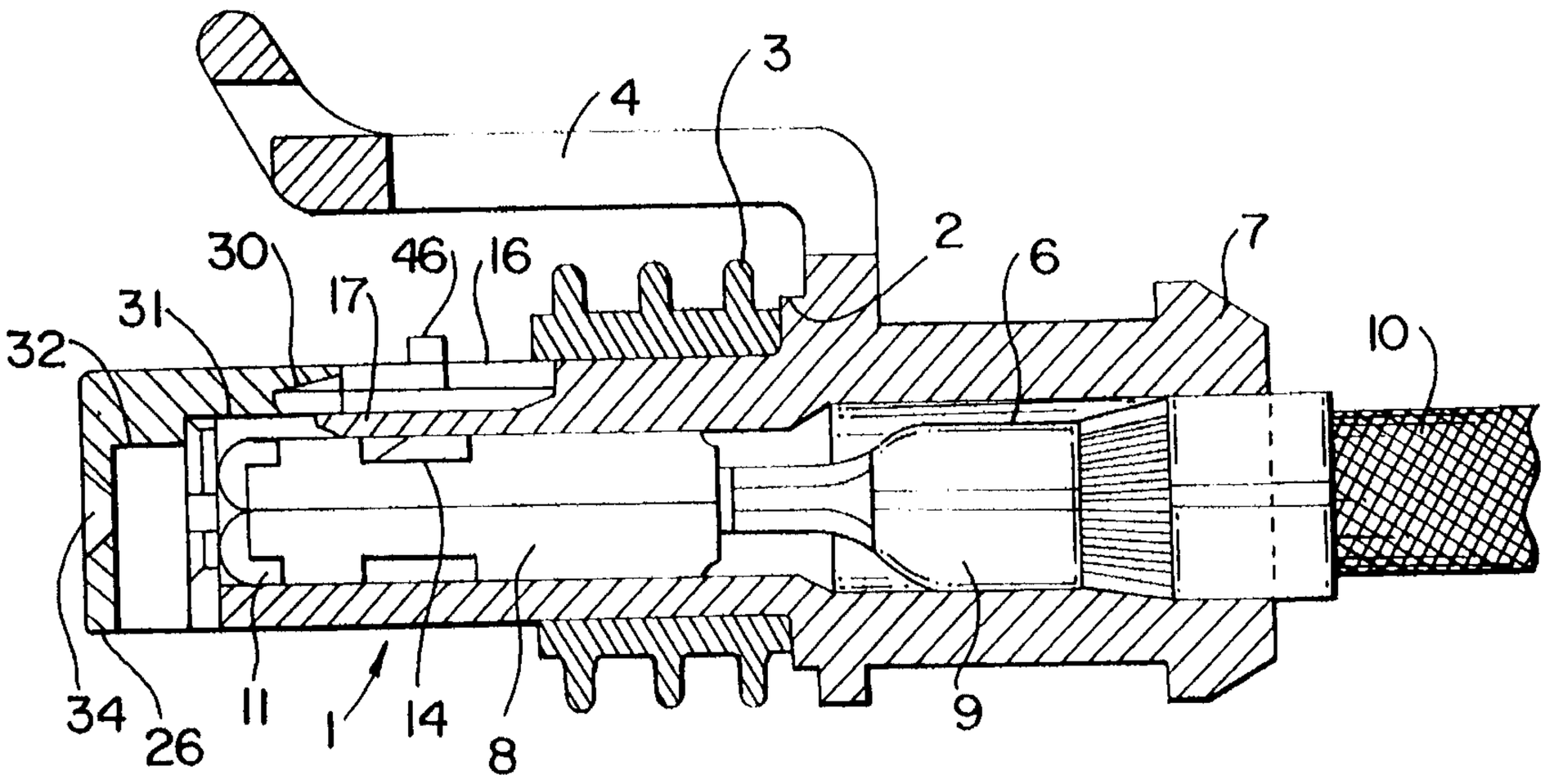
Fig- 6

Fig- 7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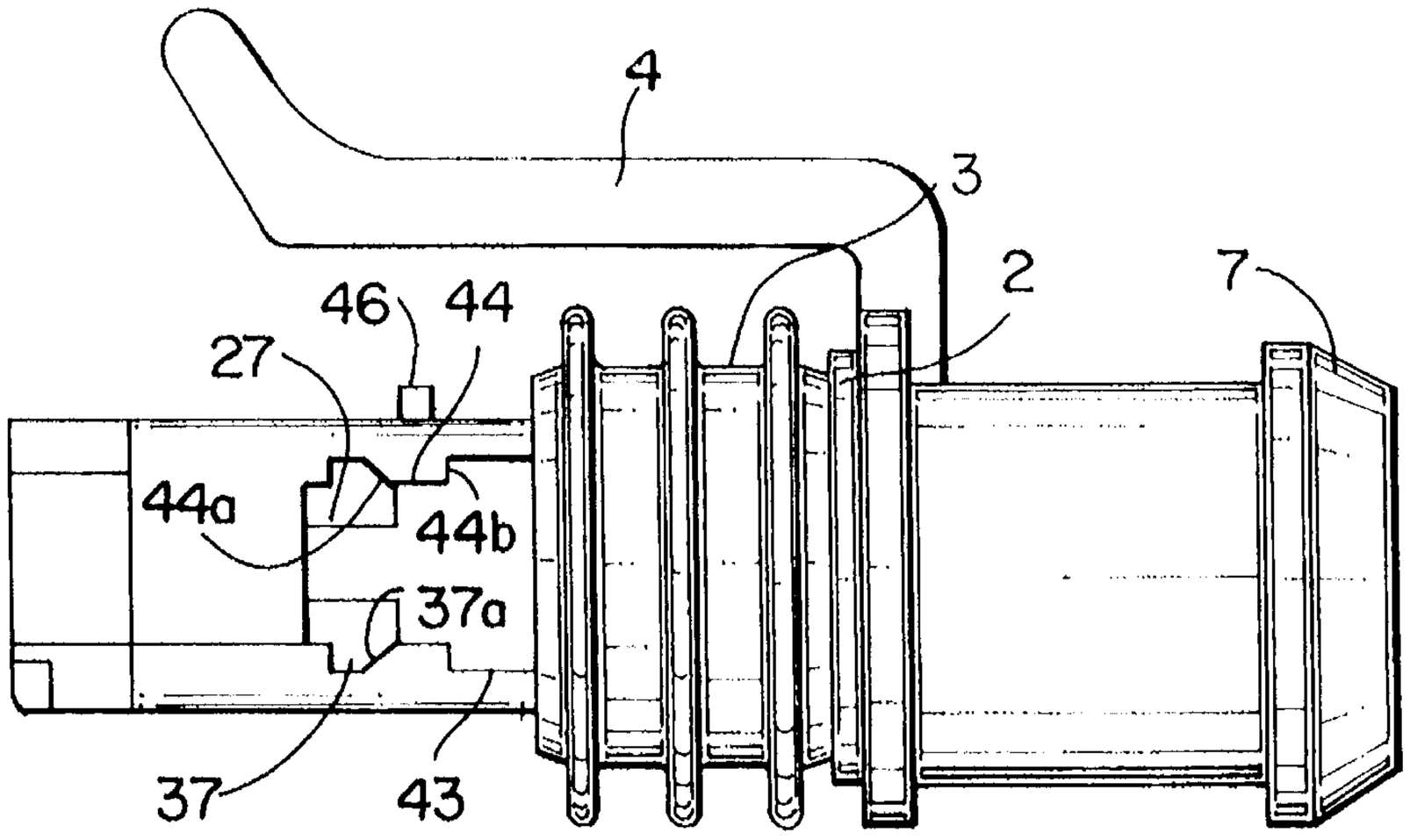
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37
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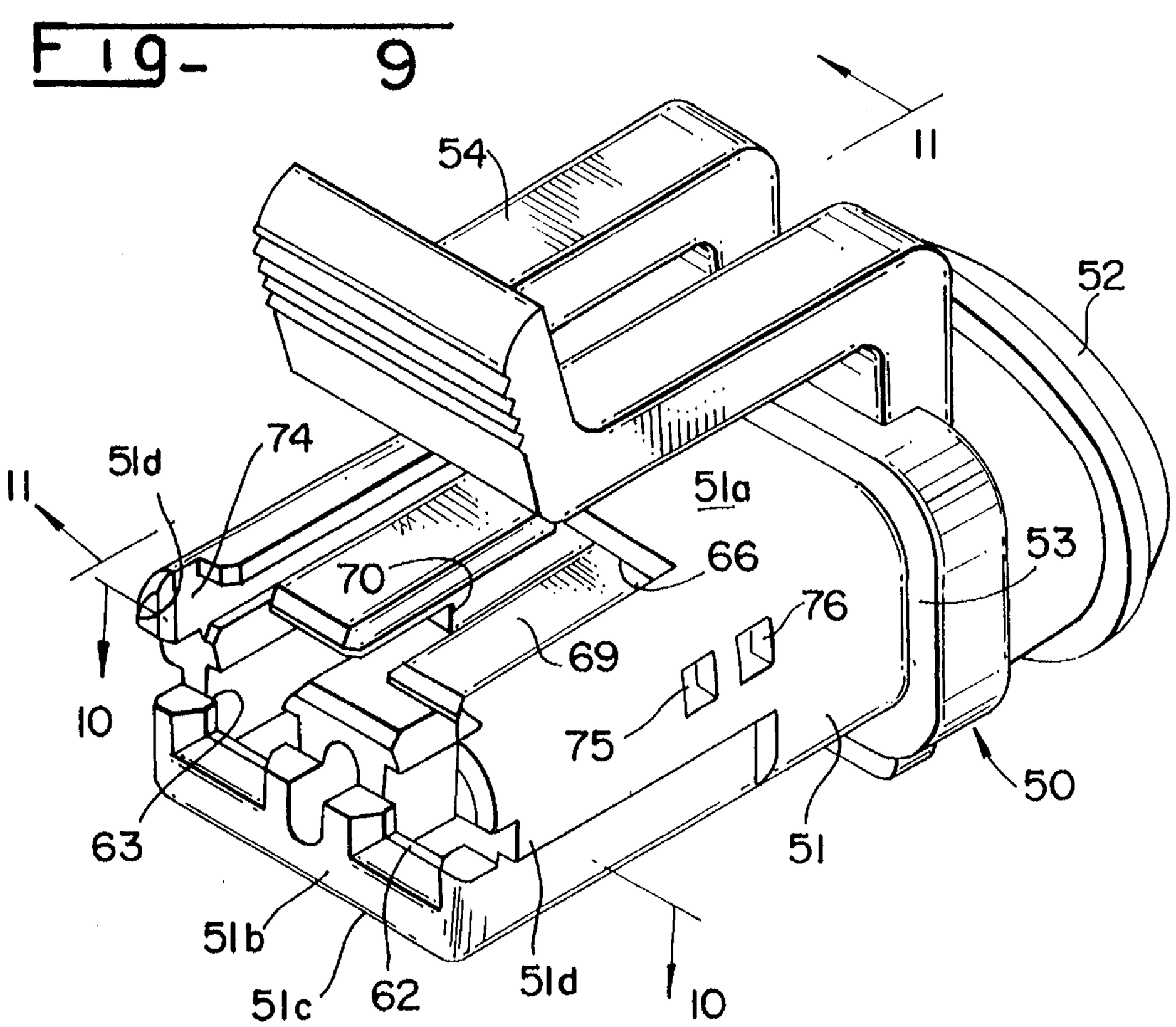
FIG - 8

FIG - 9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51c
62
51d
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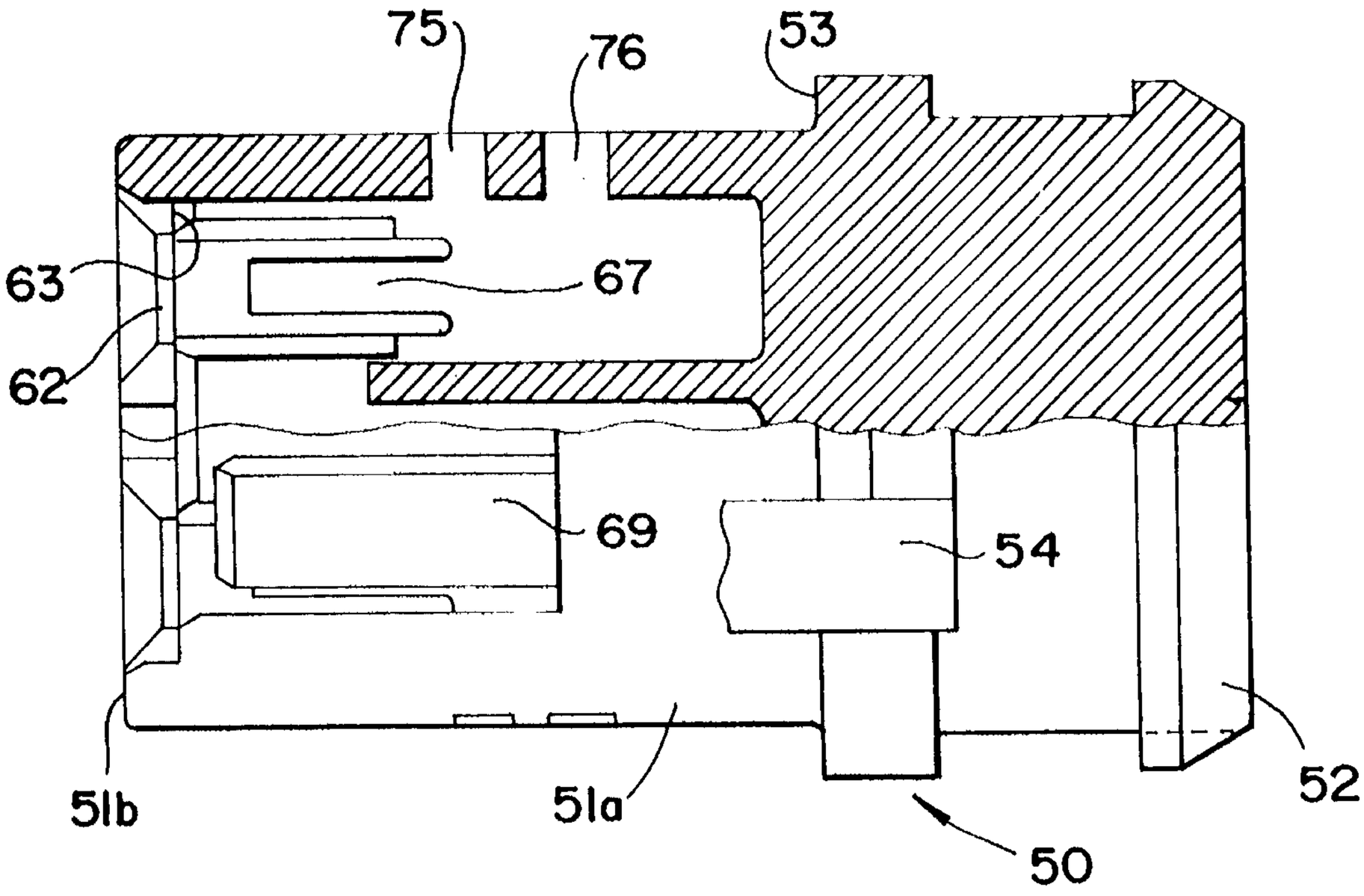


FIG - 10

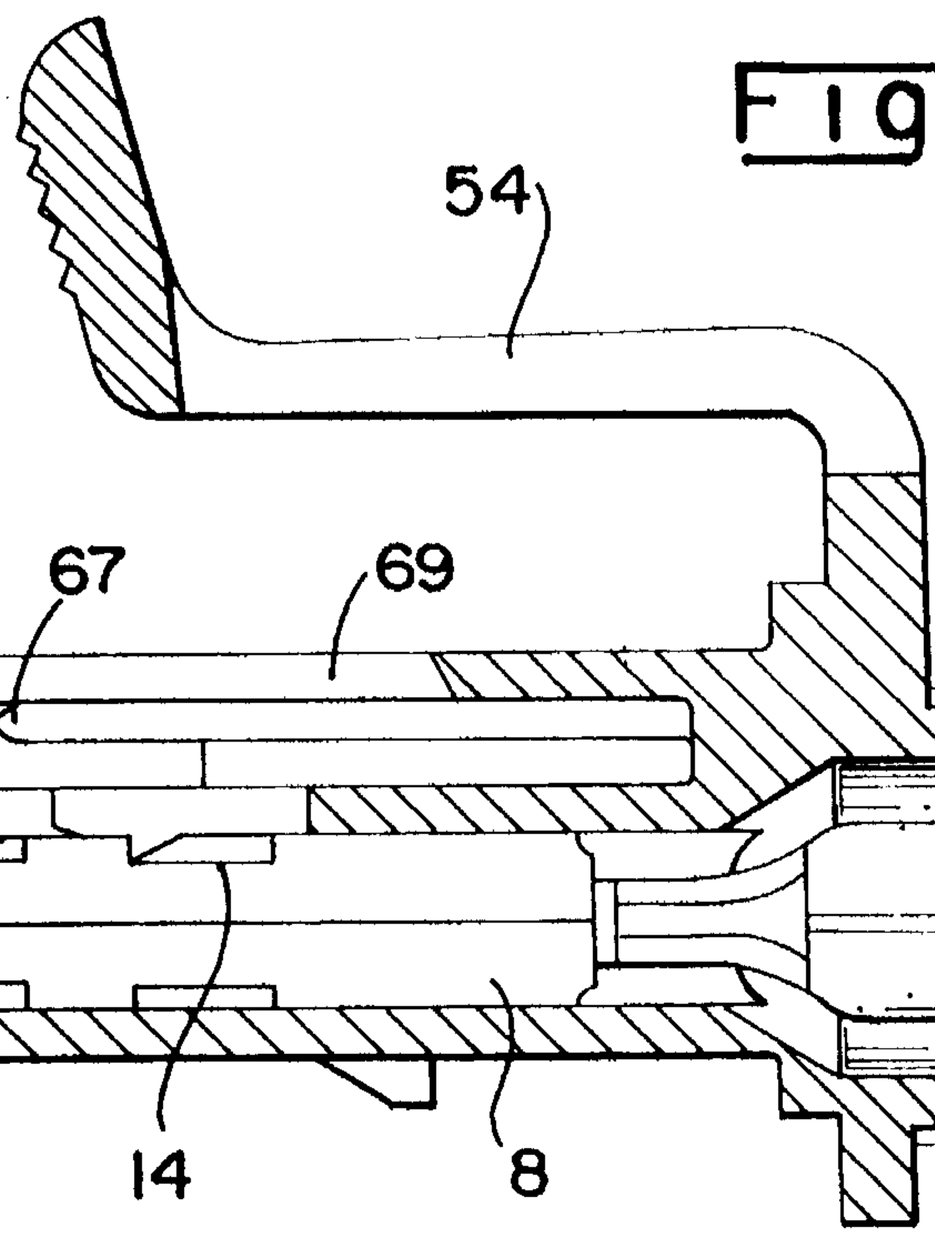
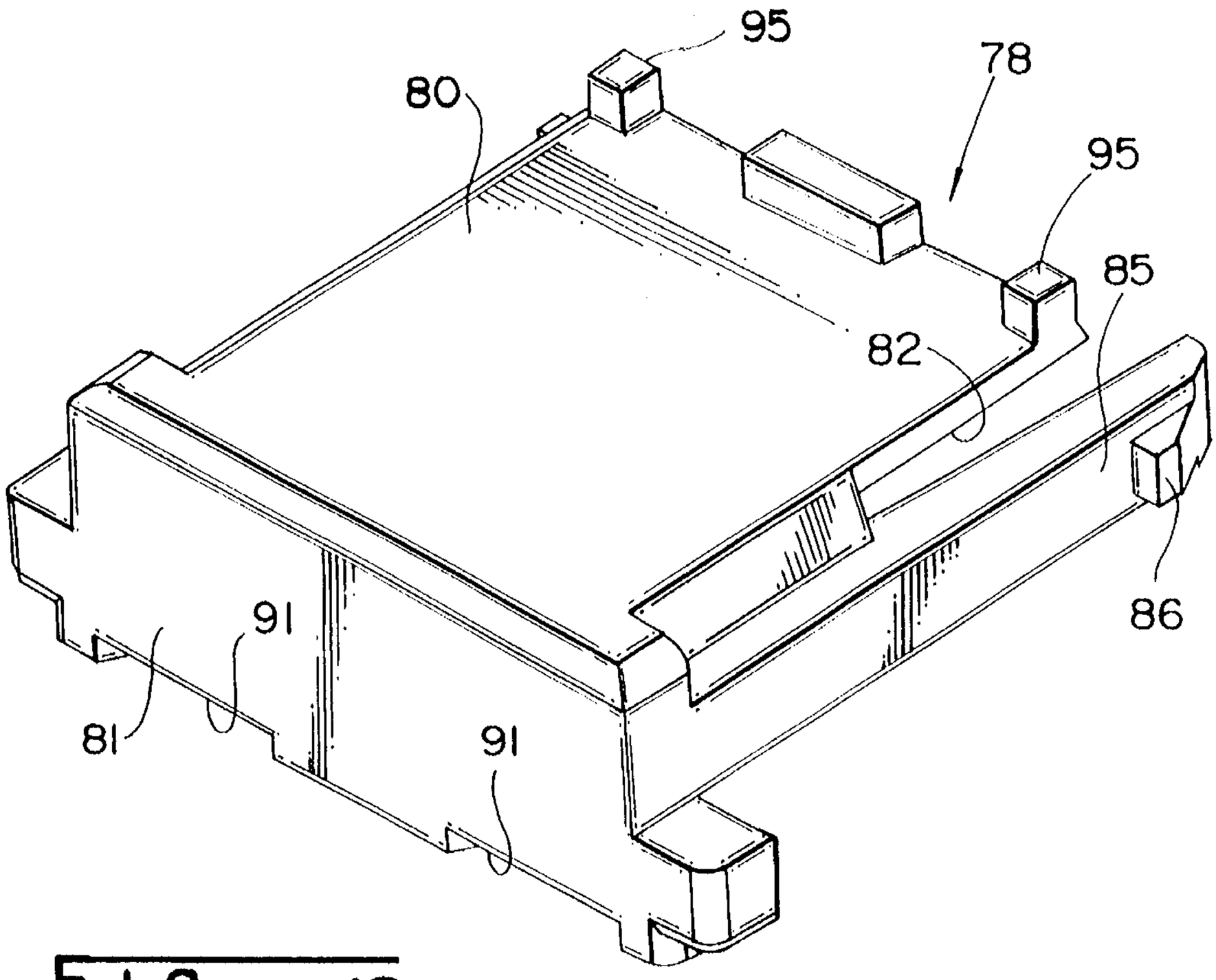


FIG - 11


95
78
80
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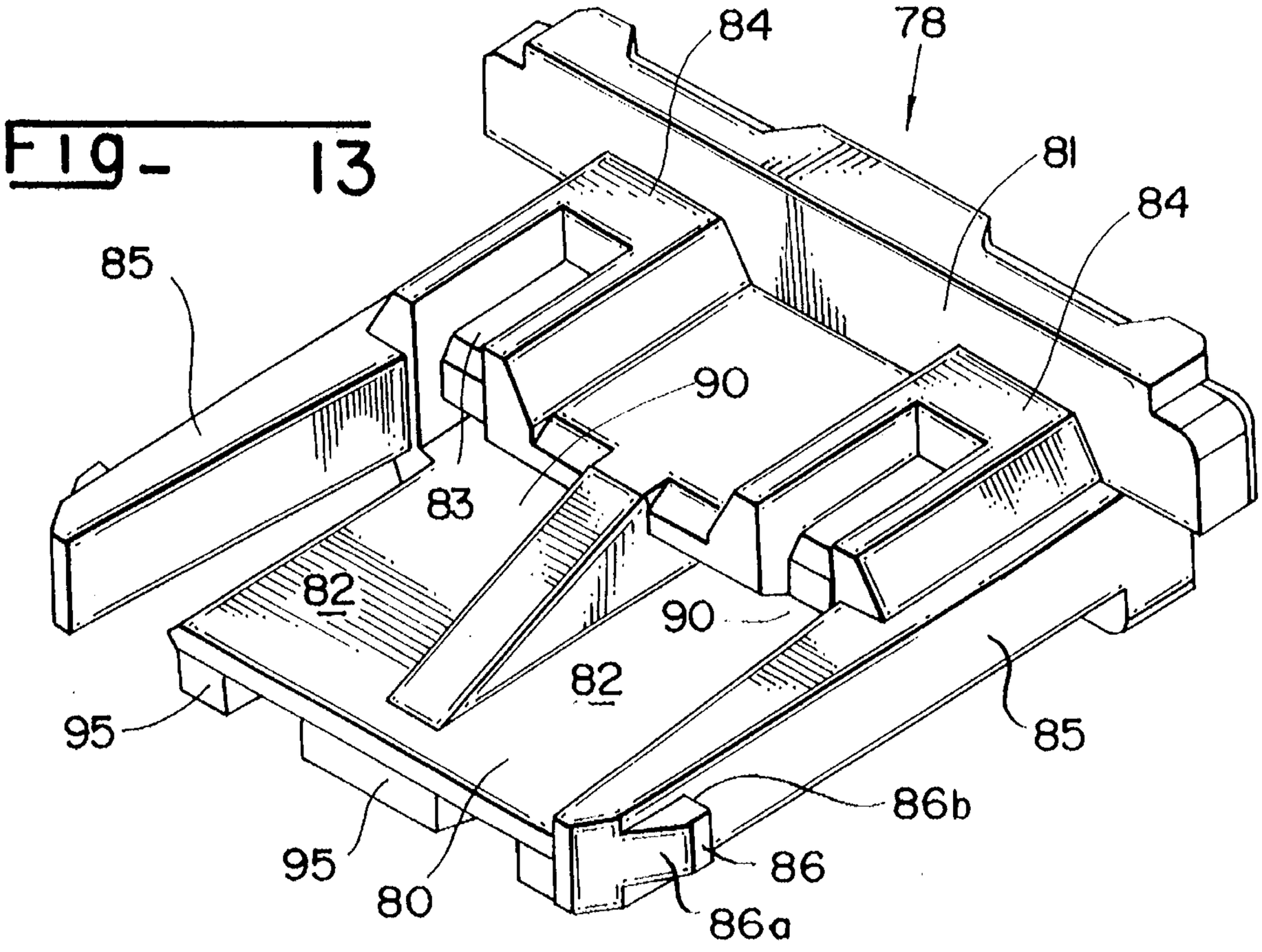
85
82
86
91
81
91

FIG- 12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86a

FIG- 13

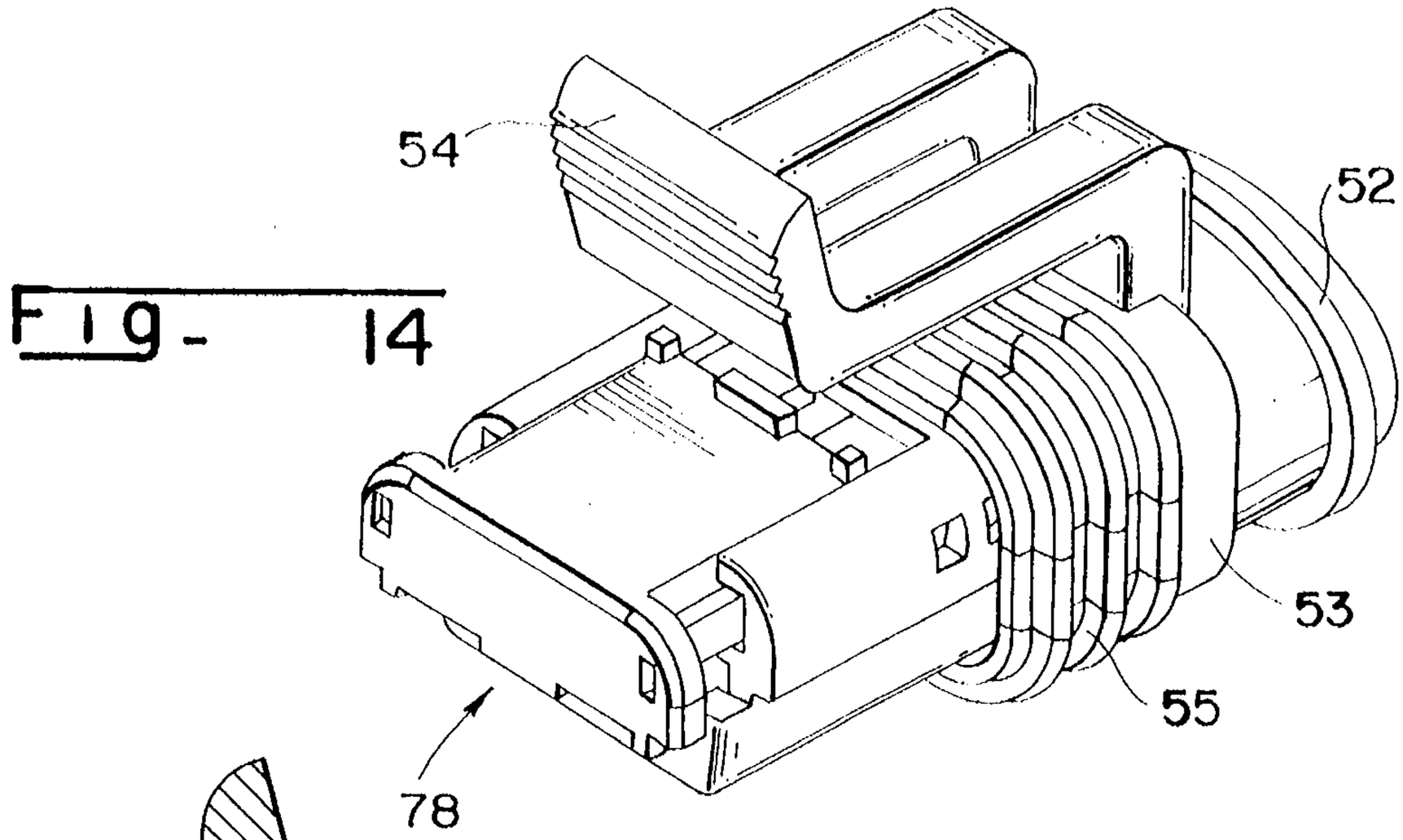


Fig- 14

Fig- 15

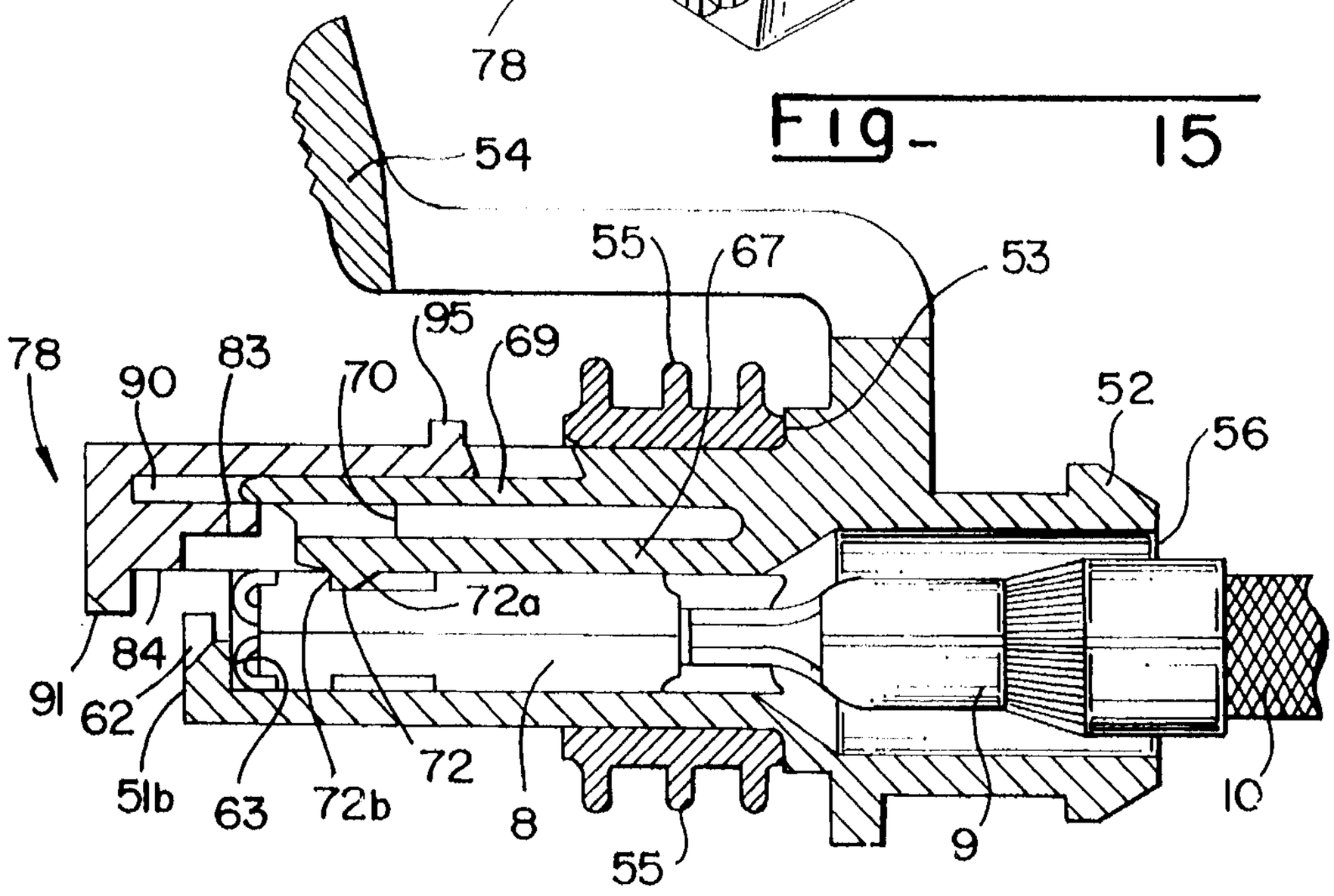
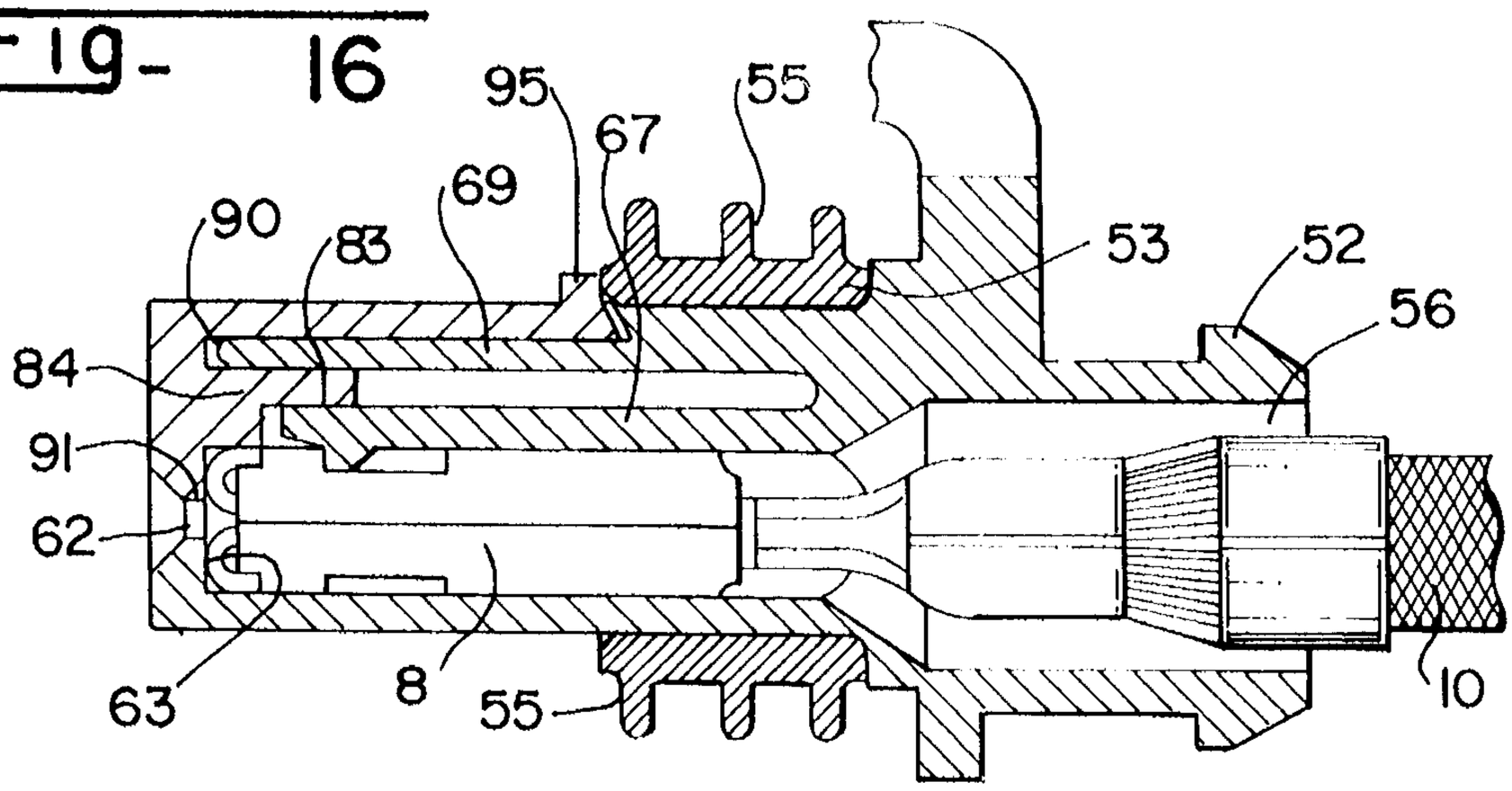


Fig- 16



ELECTRICAL CONNECTOR HOUSING MEMBER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention concerns an electrical connector housing member.

2. Description of the Prior Art

The invention concerns an electrical connector housing member including passages accommodating electrical contact members which are held in place by resilient lugs provided with projections so that when the contact members are fitted the resilient lugs retract resiliently, their projections immobilizing said members when properly housed in the passages.

Housing members of this kind include a locking member for immobilizing the resilient lugs.

An object of the present invention is to provide an electrical connector housing member which facilitates fitting the electrical contact members and which is highly secure.

SUMMARY OF THE INVENTION

The invention consists in an electrical connector housing member, comprising a body in which there are passages each adapted to receive an electrical contact member, said body including in each passage a resilient lug having on the side facing towards the interior of the passage a projection having a ramp surface on the side towards an end of said passage from which the electrical contact member is inserted and an abrupt surface on the opposite side, said projection being adapted to cooperate with a retaining opening in said electrical contact member, said body including an opening on the side facing the side of the resilient lug opposite that having the projection on it and a locking member for said resilient lug adapted to occupy a standby position and a position in which it locks the latter and being formed by a cover wall adapted to be inserted in the opening of an end wall adapted to cooperate with the end of the body opposite that from which electrical contact members are inserted, the side of said cover wall facing toward the resilient lugs having steps offset so that when the locking member is engaged with the body the locking member occupies the standby position in which the resilient lugs can move freely to enable fitting of the electrical contact members whereas when the locking member occupies the locking position the steps bear against said resilient lugs to lock them, in which housing member the body includes on the side opposite the ends of the passages from which the electrical contact members are inserted, and along two opposite edges, a slideway having, along its length, first and second detents whereas the locking member has, along two opposite edges, a locking bar adapted to engage in the slideways of the body, each locking bar having an abutment near its free end adapted to cooperate selectively with the detents.

The invention is described in more detail below with reference to specific embodiments of the invention shown in the appended drawings by way of example only.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of an electrical connector housing member.

FIG. **2** is a view in section on the line **2**—**2** in FIG. **1**.

FIG. **3** is a view in section on the line **3**—**3** in FIG. **1**.

FIG. **4** is a perspective view of the locking member for the electrical contact members.

FIG. **5** is a perspective view of the locking member for the electrical contact members.

FIG. **6** is a perspective view of the housing member from FIG. **1** with the locking member in a standby position.

FIG. **7** is a view in section on the line **7**—**7** in FIG. **6**.

FIG. **8** is a side elevation view of the housing member from FIG. **6**.

FIG. **9** is a perspective view of an alternative embodiment of housing member.

FIG. **10** is a view in section on the line **10**—**10** in FIG. **9**.

FIG. **11** is a view in section in the line **11**—**11** in FIG. **10**.

FIG. **12** is a perspective view of an electrical contact member locking member.

FIG. **13** is a perspective view of the locking member.

FIG. **14** is a perspective view of the housing member with the locking member in a standby position.

FIG. **15** is a view in section on the line **15**—**15** in FIG. **14**.

FIG. **16** is a view similar to FIG. **15** showing the locking member in a locked position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. **1** to **8** show a housing member **1** having an external shoulder **2** for retaining a resilient seal **3** and a resilient lug **4** for locking it to a complementary member (not shown) having a skirt into which a male end **5** of said member **1** is inserted.

The male end **5** has a ceiling wall **5***a*, a floor wall **5***c*, two lateral walls **5***d* and an anterior end **5***b*.

The member **1** has a series of passages **6** which are open at one end **7** to enable the insertion of electrical contact members **8** which have crimping lugs **9** for attaching an electrical conductor **10** at one end and a resilient receptacle **11** designed to grip a male tongue mounted in the complementary female member at the other end.

The female electrical contact member **8** has a retaining opening **14** in its body.

Each passage **6** has at the end **5***d* lateral abutments **15** for retaining the resilient receptacle **11**. Openings **16** are formed in line with each passage **6** in the wall **5***a* of said male end **5**, on the side facing the resilient lug **4**. Resilient lugs **17** face the openings **16**.

On the side towards the interior of each passage **6** each resilient lug **17** has a projection **18** with a ramp surface **18***a* on the side from which the members **8** are inserted and an abrupt surface **18***b* on the side towards the abutments **15**.

Two slots **19** are formed in the wall **5***a*.

FIGS. **4** and **5** show a locking member **25** for the contact members **8** in perspective.

The member **25** comprises a body with a cover wall **28**, two lateral locking bars **27** and an end wall **26**.

The wall **28** is extended by two lugs **29** adapted to engage in the slots **19** and its inside surface **25***a* has steps **30**, **31** and **32** in the portions adapted to be aligned with the passages **6**, in the openings **16**. The steps **30** are recessed while the steps **31** and **32** project.

The free ends of the lugs **29** include abutments **46** adapted to retain the seal **3**.

The end wall **26** has slots **34** adapted to align with the ends of the passages **6** including the abutments **15** and allowing male contacts to pass through them.

The lateral locking bars **27** comprise two branches with abutments **37** at their free end, each abutment having a ramp surface **37***a* facing away from the adjacent branch and an abrupt surface **37***b*.

Referring to FIGS. **1** and **2**, the male end **5** has two slideways **40** extending from the free end to slots **41**. Each slot **41** has a first detent **42** and a second detent **43** separated by pegs **44** which have ramp surfaces **44***a* on the side towards the detents **42** and abrupt surfaces **44***b* on the side towards the detents **43**.

The member **25** is mounted at the end **5***b* of the male end **5** so that its surface **25***a* contacts the surface **5***a* with the receptacles **27** inserted in the slideways **40** and the abutments **37** in the detents **42**. In this standby position the lugs **17** can move resiliently and it is therefore possible to fit the members **8**, which are inserted so that the projections **18** enter the openings **14**. The member **25** is then pushed in, the ramp surface **37***a* of the abutments **37** cooperating with the ramp surface **44***a*, escaping from the detent **42** and lodging in the detent **43** behind the abrupt surface **44***b*. In this position the member **25** can no longer be unlocked inadvertently and the resilient lug **17** cooperates with the step **31** so that it can no longer bend resiliently. The step **32** is aligned with the side of said lug **17** facing the interior of the passage so that the member **8** is held in the passage **6** without play. Note that if the electrical contact member **8** is not inserted into the passage **6** in such a way as to be locked by the projection **18** of the resilient lug **17** properly inserted into the retaining opening **14**, then said lug **17** will remain raised and the edge of the step **31** will abut against the free end of said lug, so opposing locking of the member **25**.

FIGS. **9** to **16** shows a second embodiment of the invention.

FIG. **9** shows a male housing member having a body **50** with a male end **51** formed by two lateral walls **51***d*, a floor wall **51***c*, a ceiling wall **51***a* and an anterior end **51***b*.

The body **50** includes an abutment **53** for a seal **55** and has a posterior end **52**.

On the same side as the ceiling wall **51***a* it has a resilient locking lug **54** adapted to cooperate with a peg on a female member (not shown).

The body **50** includes two passages **56** which are open at the posterior end **52** to enable the insertion of a female electrical contact member **58** having a receptacle **59** for gripping a male contact at one end and lugs **60** for crimping it to an electrical conductor at the other end, the body of said member having a retaining opening **61** in it.

At the anterior end **51***b*, each passage **56** includes abutments **63** and the ceiling wall **51***a* has an opening **66**.

In the opening **66** is a resilient lug **67** in line with each passage **56** and, above each resilient lug **67**, a guide bar **69** having a shoulder **70**.

On the side facing towards the inside of the passage **56** each resilient lug **67** has a projection **72** having on the side towards the anterior end **51***b* an abrupt surface **72***b* and on the opposite side a ramp surface **72***a*.

On the same side as the lateral walls **51***d* the body **50** includes slideways **74** having detents **75** and **76** partway along their length.

FIGS. **12** and **13** show a locking member **78** for the contact members **58** in perspective. It has a cover wall **80** and an end wall **81**, the cover wall **80** having on its inside surface steps **82**, **83** and **84** and a slot **90** receiving the guide bars **69**.

The free end of the cover wall **82** has abutments **95** for retaining the seal **55** on the side opposite the steps **82**, **83** and **84**.

At the sides the member **78** has locking bars **85** which have at their outward free ends abutments **86** including a ramp surface **86***a* and an abrupt surface **86***b* facing towards the end wall **61**.

Notches **91** in the wall **81** are adapted to align with the abutments **63** to forms slots **62** through which male contacts can be inserted into the receptacles **59**.

The member **78** is mounted on the member **50** by engaging the immobilizing bars **85** in the slideways **74** until the abutments **86** insert in the detents **75**. In this position (see FIG. **15**) the resilient lugs **67** are free to move and the contact members **58** can be inserted into the passages **56** from the end **52** until they bear through the receptacle **59** against the abutment **63**, resiliently raising the lugs **67** until the projections **72** enter the openings **61**. The member **78** is then pushed in, its abutments **86** escaping from the detents **75** to engage in the detents **76**. In this position the steps **83** bear on the side of the lugs **67** opposite that with the projection **72**, with a result that said lugs are immobilized.

The steps **84** align with the side of the lugs **67** facing towards the inside of the passages with the result that the members **58** are locked in the passages **56** without play.

Note that if any of the members **58** is not properly located in the respective passage, the lugs **67** remaining raised, it is impossible to move the member **78** into the locking position, the edge of the step **83** abutting against the free end of said lugs **67**.

Of course, the invention is not limited to the embodiments shown and described. Numerous modifications of detail can be made thereto without departing from the scope of the invention.

There is claimed:

1. Electrical connector housing member, comprising a body in which there are passages each adapted to receive an electrical contact member, said body including in each passage a resilient lug having on the side facing towards the interior of the passage a projection having a ramp surface on the side towards an end of said passage from which the electrical contact member is inserted and an abrupt surface on the opposite side, said projection being adapted to cooperate with a retaining opening in said electrical contact member, said body including an opening on the side facing the side of said resilient lug opposite that having said projection on it and a locking member for said resilient lug adapted to occupy a standby position and a position in which it locks the latter and being formed by a cover wall adapted to be inserted in the opening of an end wall adapted to cooperate with the end of said body opposite that from which said electrical contact members are inserted, the side of said cover wall facing toward said resilient lugs having steps offset so that when said locking member is engaged with said body the locking member occupies said standby position in which said resilient lugs can move freely to enable fitting of said electrical contact members whereas when said locking member occupies said locking position said steps bear against said resilient lugs to lock them, in which housing member said body includes on the side opposite the ends of said passages from which said electrical contact members are inserted, and along two opposite edges, a slideway having, along its length, first and second detents whereas said locking member has, along two opposite edges, a locking bar adapted to engage in said slideways of said body, each locking bar having an abutment near a free end adapted to cooperate selectively with said detents.

2. Electrical connection housing member according to claim **1** wherein said locking bars have two branches includ-

ing at their free end, on their outside surface, abutments having a ramp surface on the side towards the free end and an abrupt surface on the opposite side, whereas said first detents are formed in slots separated from said second detents by pegs which have a ramp surface on the side towards said first detents and abrupt surfaces on the side towards said second detents.

3. Electrical connection housing member according to claim 1 wherein said body is provided with a seal and a free end of the cover wall of said locking member has an abutment for retaining said seal.

* * * * *